Instream Flow Workshop
January 27, 2021

COLORADO
Colorado Water Conservation Board
Department of Natural Resources

ISF Workshop Agenda

- Instream Flow Program Overview ~ 20 Minutes
- Bureau of Land Management Recommendations ~ 20 Minutes
- Colorado Parks and Wildlife Recommendations ~ 20 Minutes
- High Country Conservation Advocates Recommendations ~ 20 Minutes

ISF STAFF

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Physical Protection & Monitoring

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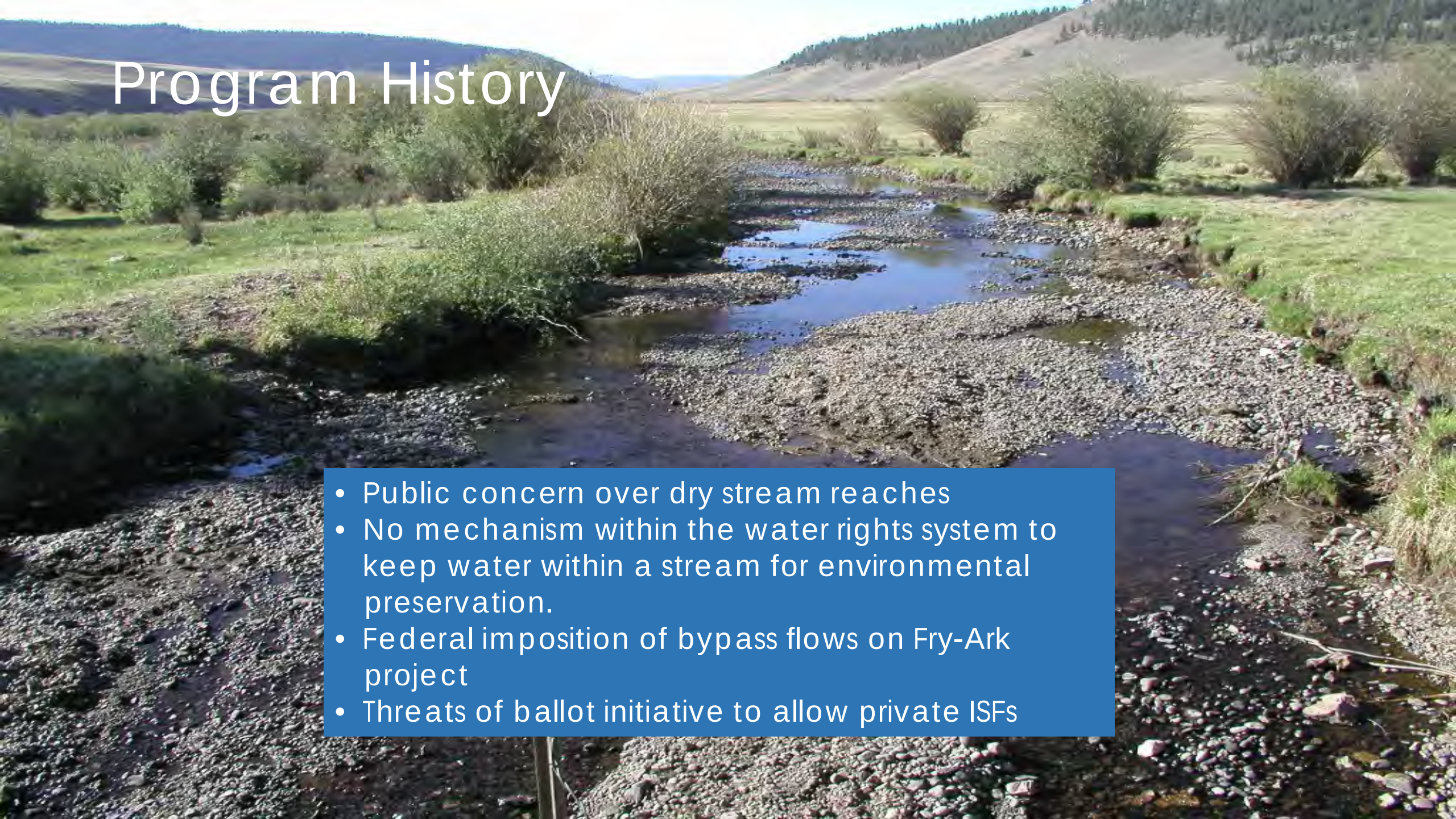
Appropriations &
Physical Protection Analyses

COLIN WATSON
Engineer

Engineering Analysis,
Acquisition Support

KIM RICOTTA
Paralegal
Legal Protection Support

Program History



- Public concern over dry stream reaches
- No mechanism within the water rights system to keep water within a stream for environmental preservation.
- Federal imposition of bypass flows on Fry-Ark project
- Threats of ballot initiative to allow private ISFs

Colorado's Legislature Weighs In

Maintain flows in streams to ensure reasonable preservation of the natural environment and achieve a balance with other beneficial uses of water in the state.

Provide regulatory certainty for water users through continued reliance on the doctrine of prior appropriation.

In 1973, the Colorado Legislature established the Instream Flow Program with the passage of Senate Bill 97:

- *Recognized "the need to correlate the activities of mankind with some reasonable preservation of the natural environment"*
- *Vested the Colorado Water Conservation Board with the authority "on behalf of the people of the state of Colorado, to appropriate or acquire… such waters of natural streams and lakes as may be required to preserve the natural environment to a reasonable degree."*

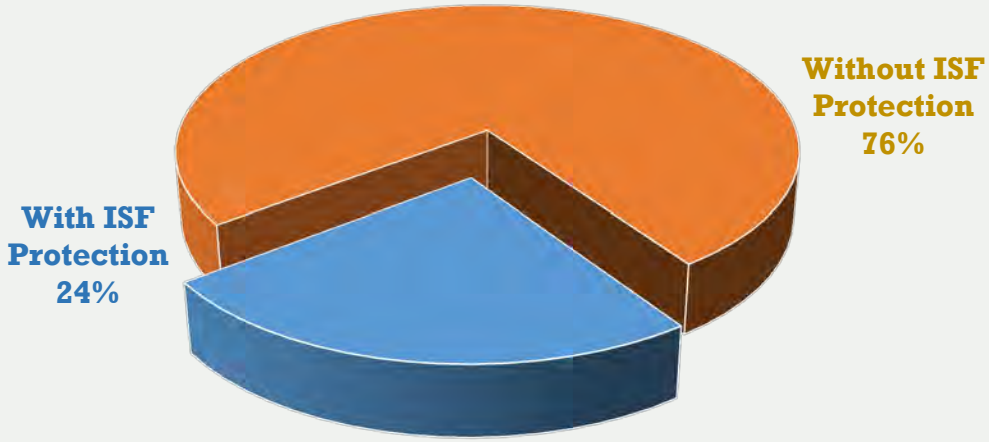
What did the ISF legislation establish?

- ISF and NLL rights are "in-channel" or "in-lake" appropriations of water and are recognized beneficial uses of water.
- Made exclusively by the Colorado Water Conservation Board
- To preserve the natural environment to a reasonable degree
- For "minimum flows" between specific points on a stream, or "levels" on natural lakes
- Administered within the State's water right priority system
- Entitled to stream conditions existing at time of appropriation

Herman Gulch

ISF Program Statistics

39,479 miles of perennial streams



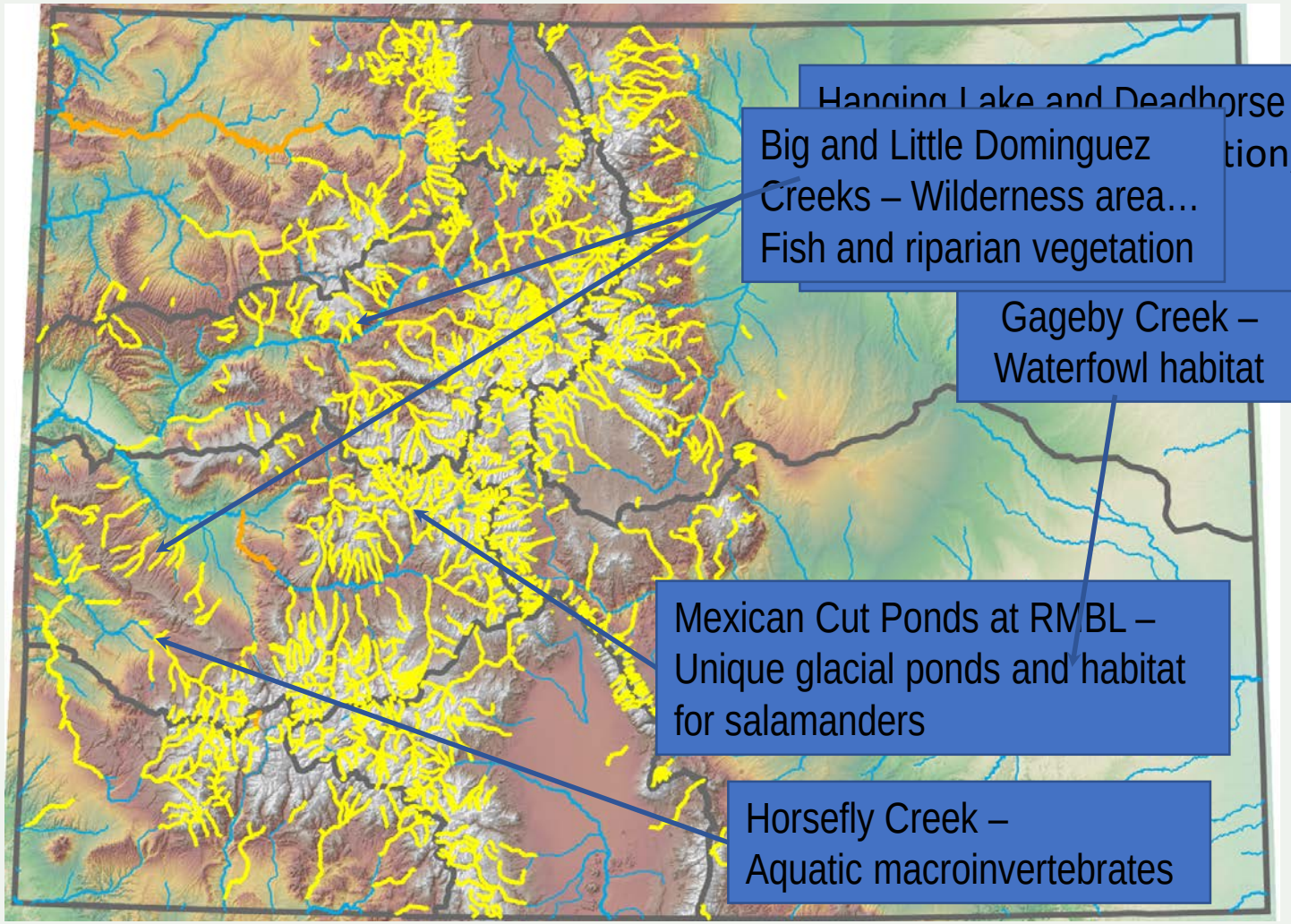
Appropriated
Instream flow water rights on

- 1,684 stream segments,
- covering 9,720 miles of stream,
- and 482 natural lakes

Acquired
Over 43 water right donations or long-term contracts for water totaling

945 stream miles

Distribution of Existing ISF Water Rights in Colorado

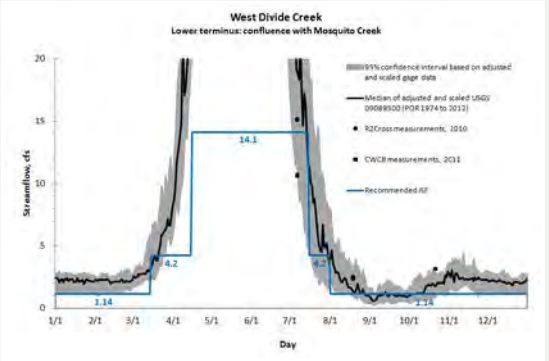


Yellow lines = Appropriations
Orange Lines = Acquisitions

Required Board Findings

A natural environment exists

- Typically identified by the presence of a fishery, but other indicators can be used
  Note: Quantification of the amount of water needed is provided by the recommending entity.



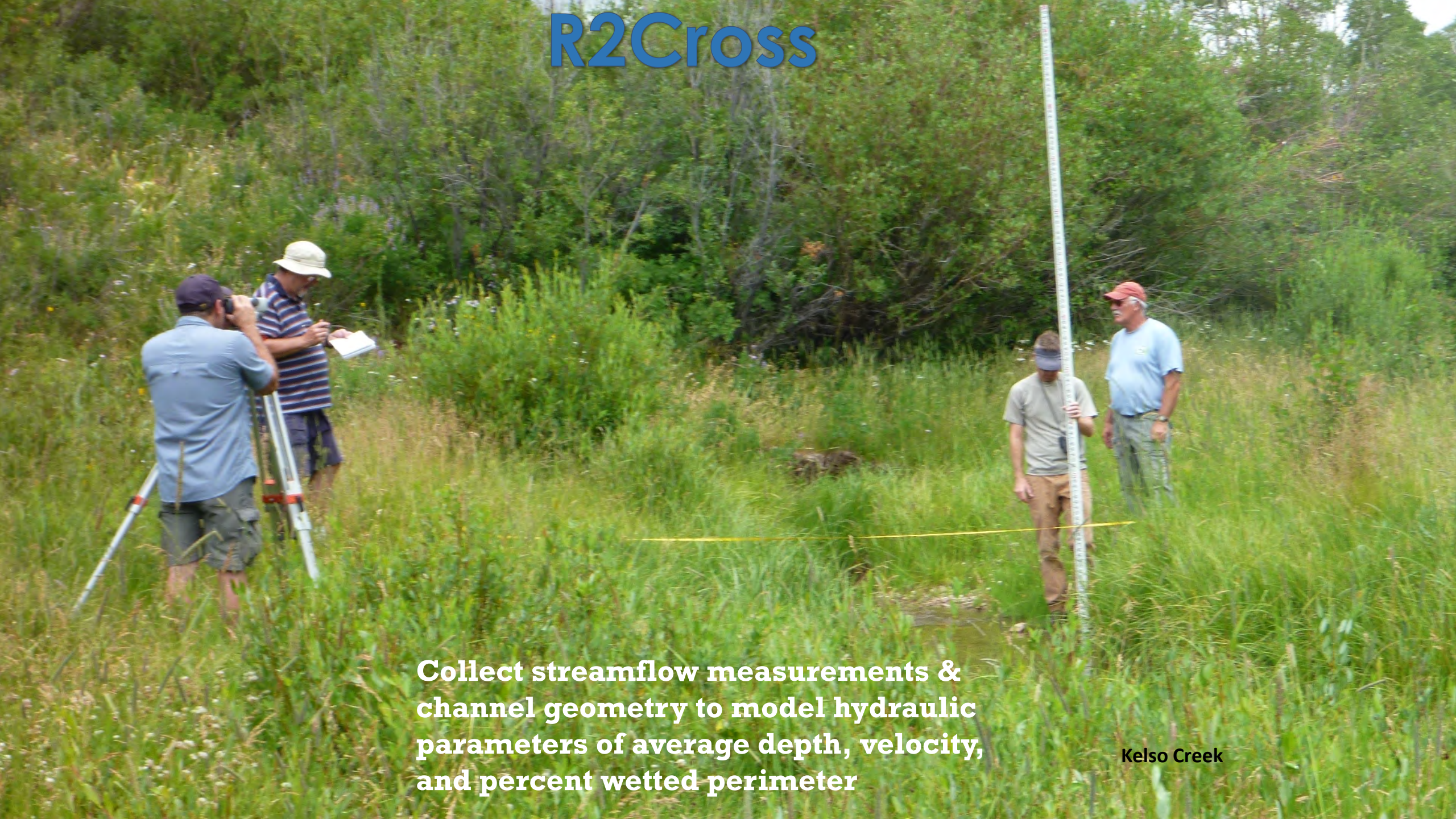
Natural environment will be preserved by the water available for appropriation

- Determined by water right and hydrologic investigations
- Daily **Median** hydrology when available – general CWCB policy to show water available 50% of time

No material injury to other rights

- New appropriations are junior water rights and have no effect on existing senior appropriations
- 37-92-102(3) b. Recognition of existing undecreed uses and exchanges

R2Cross



Collect streamflow measurements & channel geometry to model hydraulic parameters of average depth, velocity, and percent wetted perimeter

Kelso Creek

R2Cross Parameters

- Biological flow recommendation based on maintaining three hydraulic parameters
- 3 of 3 required for summer flow; 2 of 3 required for winter flow
- Many original R2Cross recommendations were based solely on 2 of 3

Bankfull Top Width (ft)	*Average Depth (ft)*	*Percent Wetted Perimeter (%)*	*Average Velocity (ft/sec)*
1-20	0.2	50	1.0
21-40	0.2-0.4	50	1.0
41-60	0.4-0.6	50-60	1.0
61-100	0.6-1.0	> 70	1.0

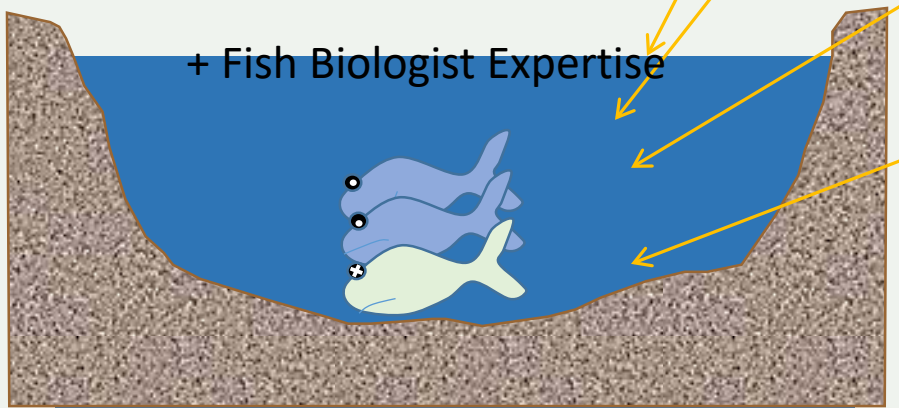
Computations

Manning's Equation

$$Q = \frac{1.486 * A * R^{2/3} * S^{1/2}}{n}$$

where:

Q = discharge (cfs)
A = cross-sectional area (ft)
R = hydraulic radius (ft)
S = slope (ft/ft)
n = Manning's n, a coefficient of roughness



+ Fish Biologist Expertise

DIST TO WATER (FT)	TOP WIDTH (FT)	AVG. DEPTH (FT)	MAX. DEPTH (FT)	AREA (SQ FT)	WETTED PERIM. (FT)	PERCENT WET PERIM (%)	HYDR RADIUS (FT)	FLOW (CFS)	AVG. VELOCITY (FT/SEC)
1.55	37.12	1.21	1.7	44.95	37.97	100.00%	1.18	61.22	1.36
1.56	37.08	1.2	1.69	44.66	37.93	99.90%	1.18	60.6	1.36
1.61	36.88	1.16	1.64	42.81	37.69	99.30%	1.14	56.71	1.32
1.66	36.68	1.12	1.59	40.97	37.45	98.60%	1.09	52.94	1.29
1.71	36.48	1.07	1.54	39.14	37.2	98.00%	1.05	49.27	1.26
1.76	36.28	1.03	1.49	37.32	36.96	97.40%	1.01	45.71	1.22
1.81	36.09	0.98	1.44	35.51	36.72	96.70%	0.97	42.26	1.19
1.86	35.89	0.94	1.39	33.71	36.48	96.10%	0.92	38.93	1.15
1.91	35.69	0.89	1.34	31.92	36.24	95.40%	0.88	35.7	1.12
1.96	35.49	0.85	1.29	30.14	36	94.80%	0.84	32.59	1.08
2.01	35.14	0.81	1.24	28.38	35.61	93.80%	0.8	29.68	1.05
2.06	34.78	0.77	1.19	26.63	35.21	92.70%	0.76	**26.9**	**1.01**
2.11	34.42	0.72	1.14	24.9	34.81	91.70%	0.72	**24.24**	**0.97**
2.16	34.06	0.68	1.09	23.19	34.41	90.60%	0.67	21.69	0.94
2.21	33.64	0.64	1.04	21.49	33.98	89.50%	0.63	19.28	0.9
2.26	32.76	0.61	0.99	19.83	33.08	87.10%	0.6	17.16	0.87
2.31	31.93	0.57	0.94	18.22	32.23	84.90%	0.57	15.16	0.83
2.36	31.38	0.53	0.89	16.63	31.66	83.40%	0.53	13.18	0.79
2.41	30.83	0.49	0.84	15.08	31.09	81.90%	0.49	11.33	0.75
2.46	30.18	0.45	0.79	13.55	30.43	80.10%	0.45	9.62	0.71
2.51	27.55	0.44	0.74	12.08	27.79	73.20%	0.43	8.44	0.7
2.56	26.42	**0.41**	0.69	10.73	26.66	70.20%	0.4	**7.12**	0.66
2.61	25.29	**0.37**	0.64	9.44	25.52	67.20%	0.37	**5.92**	0.63
2.66	23.62	0.35	0.59	8.24	23.85	62.80%	0.35	4.94	0.6
2.71	22.86	0.31	0.54	7.07	23.08	60.80%	0.31	3.91	0.55
2.76	21.07	0.28	0.49	5.99	21.28	56.10%	0.28	3.13	0.52
2.81	20.27	0.24	0.44	4.96	20.47	53.90%	0.24	2.35	0.47
2.86	19.52	0.2	0.39	3.96	19.72	**51.90%**	0.2	1.66	0.42
2.91	18.73	0.16	0.34	3.01	18.92	**49.80%**	0.16	1.07	0.36
2.96	17.41	0.12	0.29	2.1	17.57	46.30%	0.12	0.62	0.3
3.01	13.93	0.09	0.24	1.28	14.07	37.00%	0.09	0.31	0.25
3.06	10.03	0.07	0.19	0.69	10.13	26.70%	0.07	0.14	0.2
3.11	6.81	0.04	0.14	0.27	6.87	18.10%	0.04	0.04	0.14
3.16	2.11	0.02	0.09	0.05	2.13	5.60%	0.02	0.01	0.1
3.21	0.38	0.02	0.04	0.01	0.39	1.00%	0.02	0	0.09

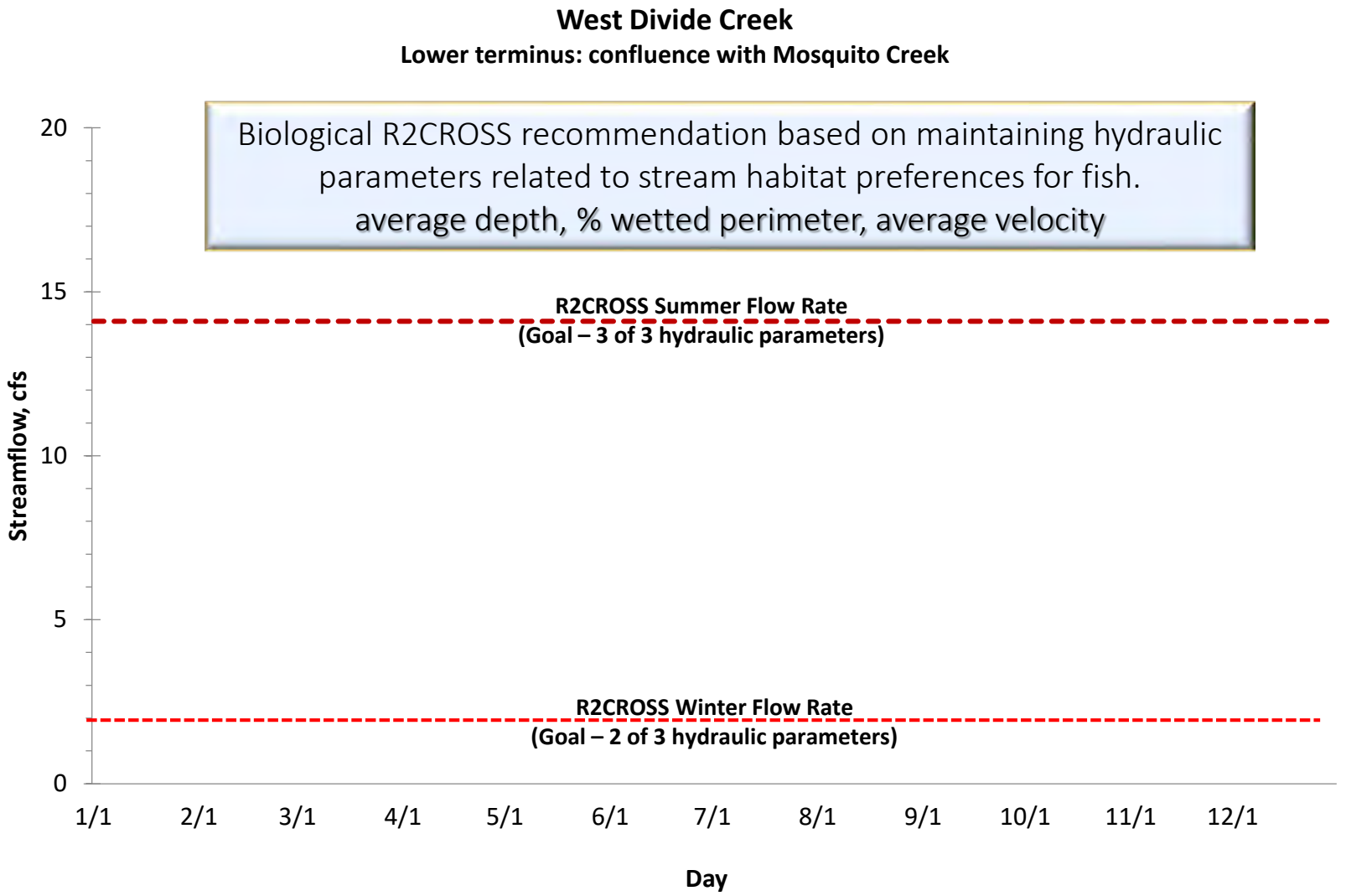
WHAT DOES AN ISF LOOK LIKE?

Water Availability
Water Balance approach, driven by best available data

- ✓ Statistical analysis of data to provide *median* daily flow hydrograph when possible.
- ✓ Gage Records +20 years, short term gages, temporary gages, spot flow measurements, diversion records.
- ✓ StreamStats analysis to provide mean monthly hydrograph when data is limited.
- ✓ Detailed CDSS modeling on larger streams.
- ✓ Additional information from water commissioners, land owners, ditch or reservoir operators, resource managers.

Water availability can be viewed as a necessary refinement that may impose limitations on biological quantification model findings.

Water Availability



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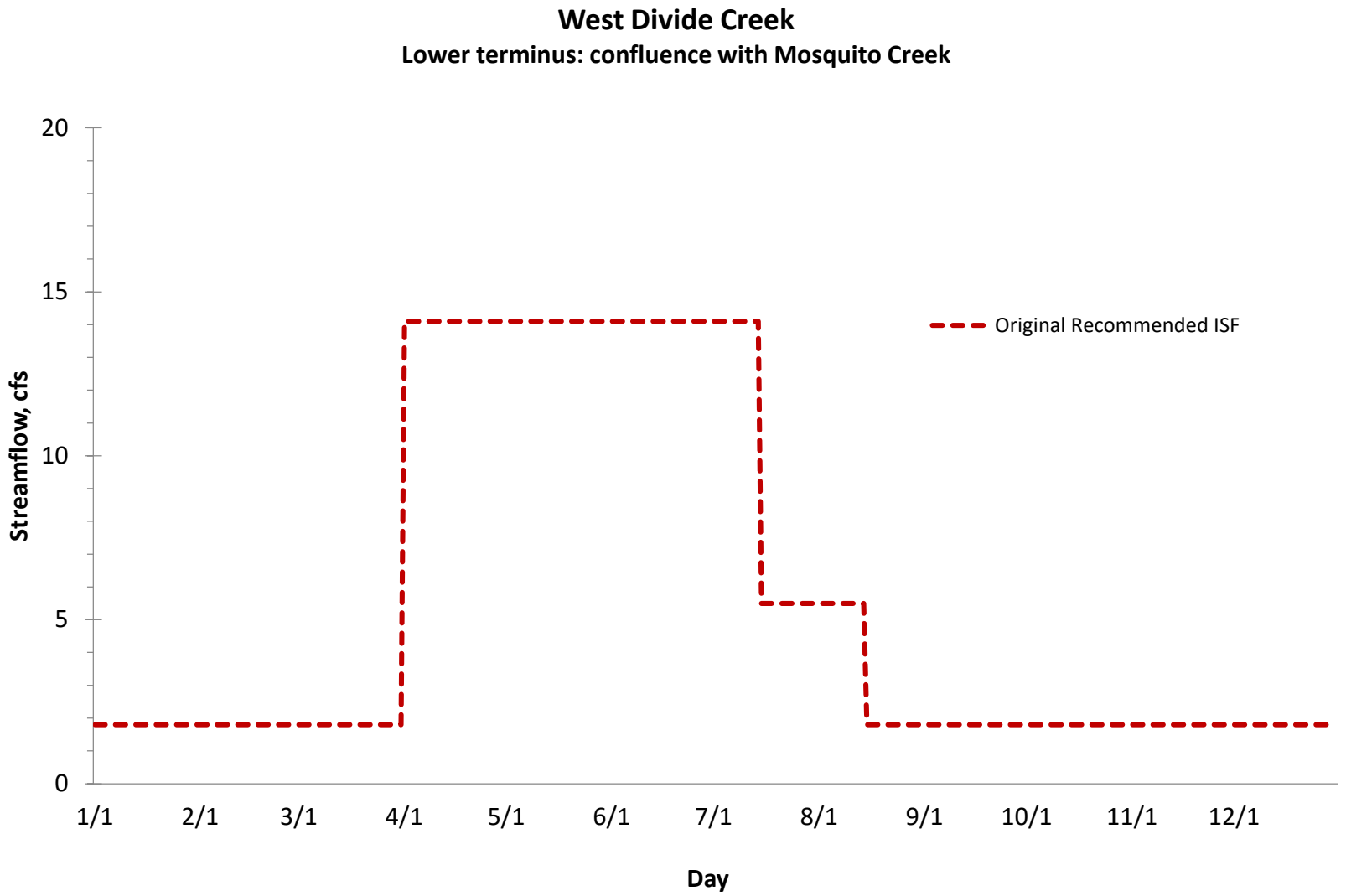

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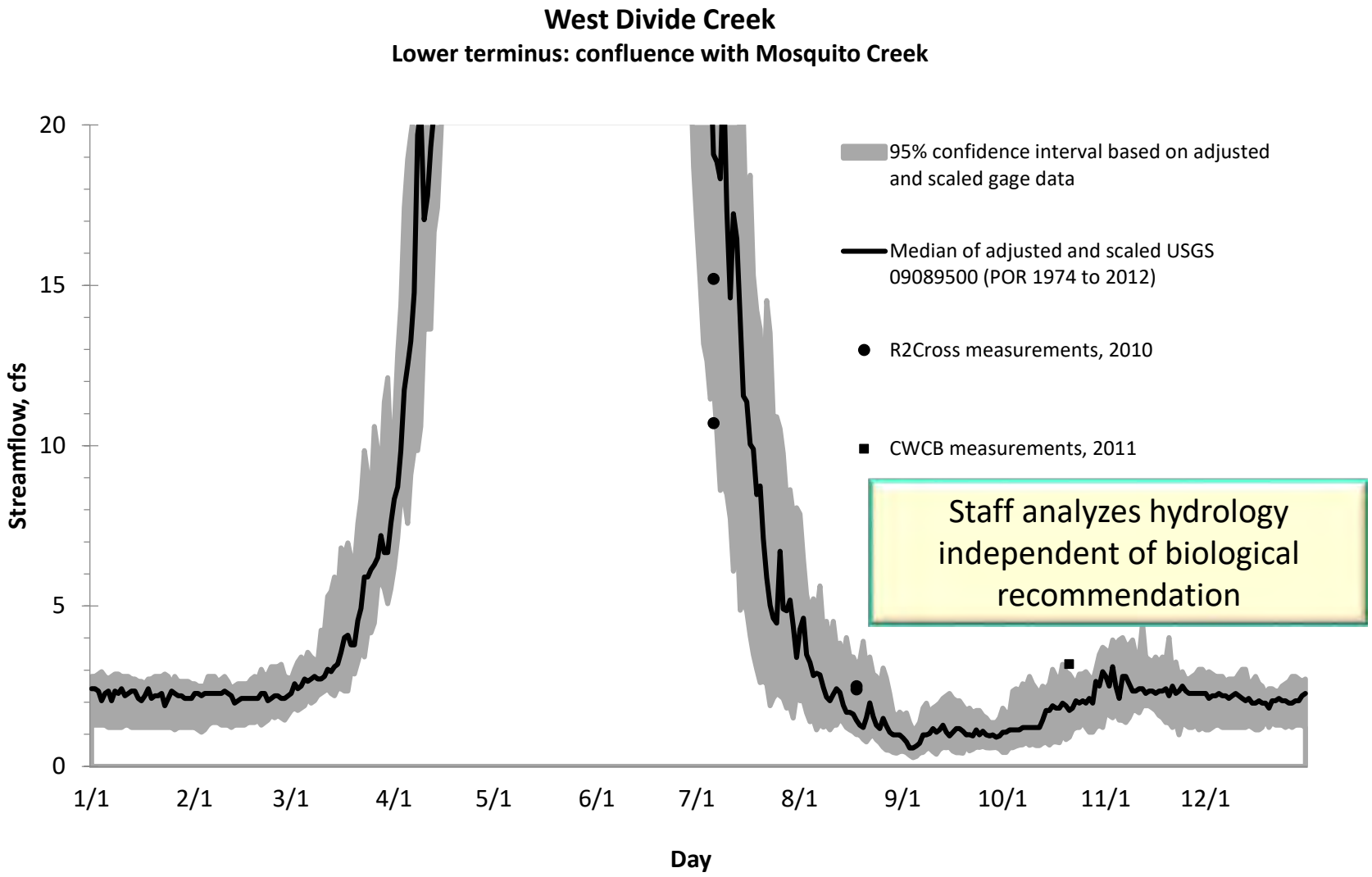

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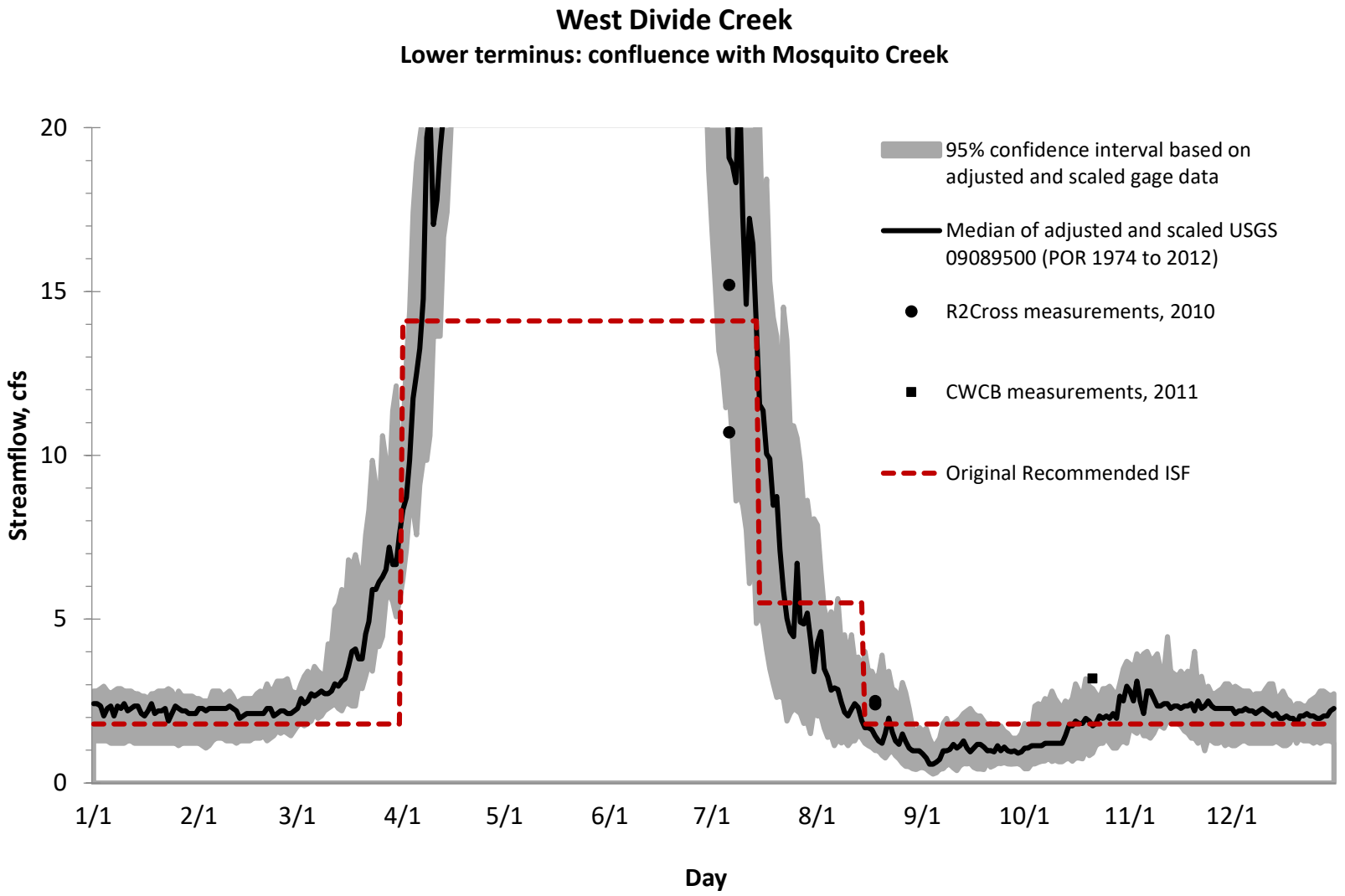

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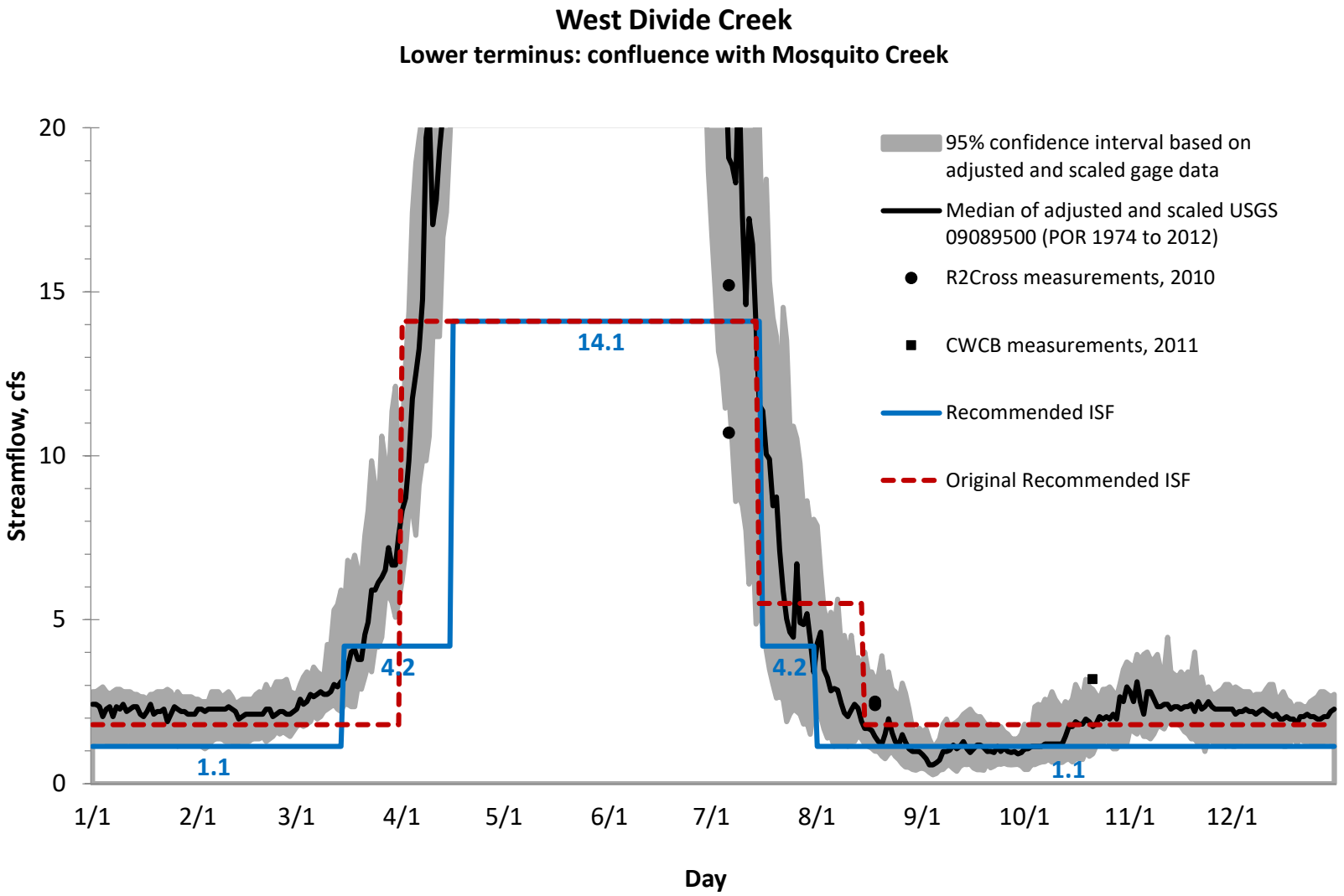

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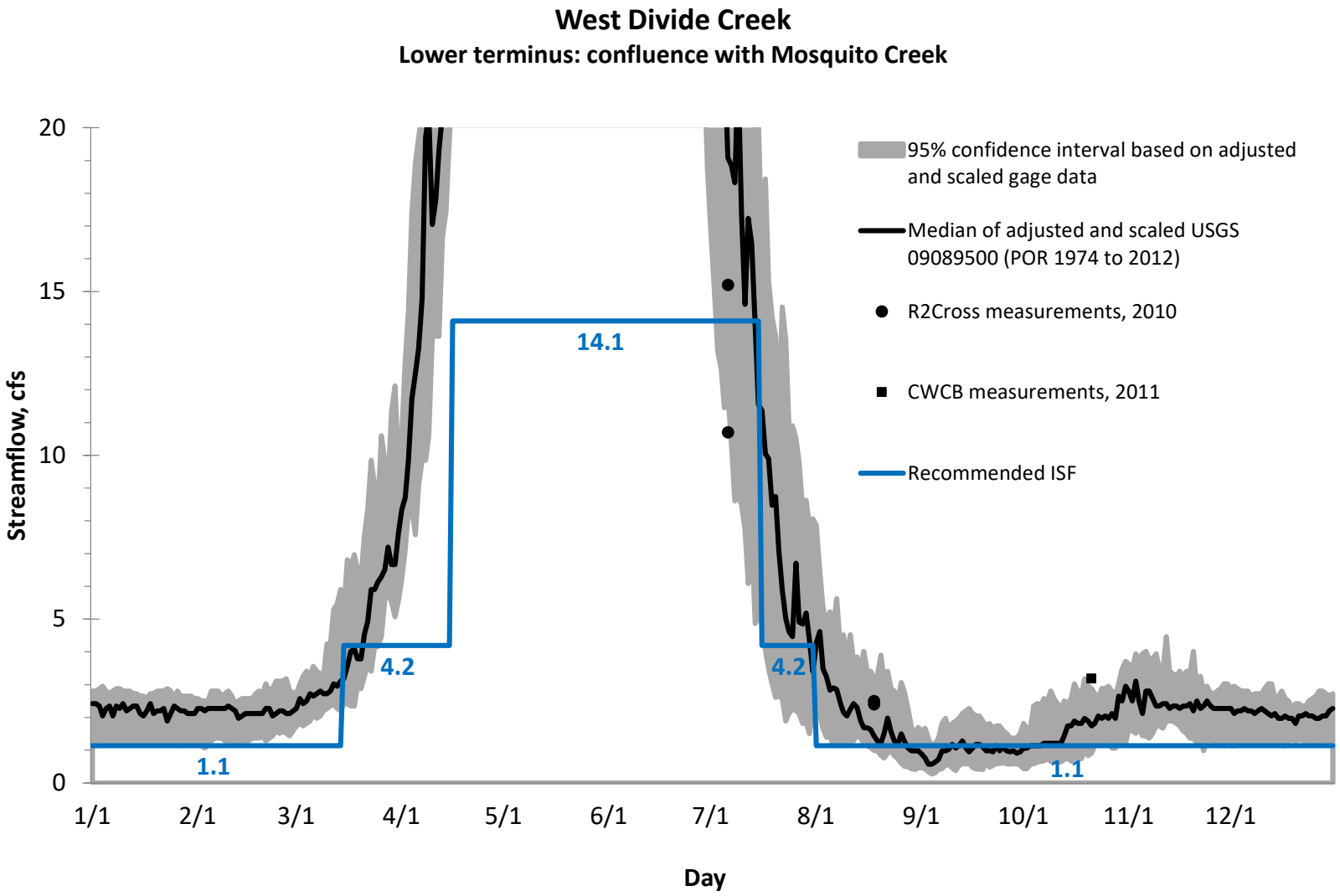
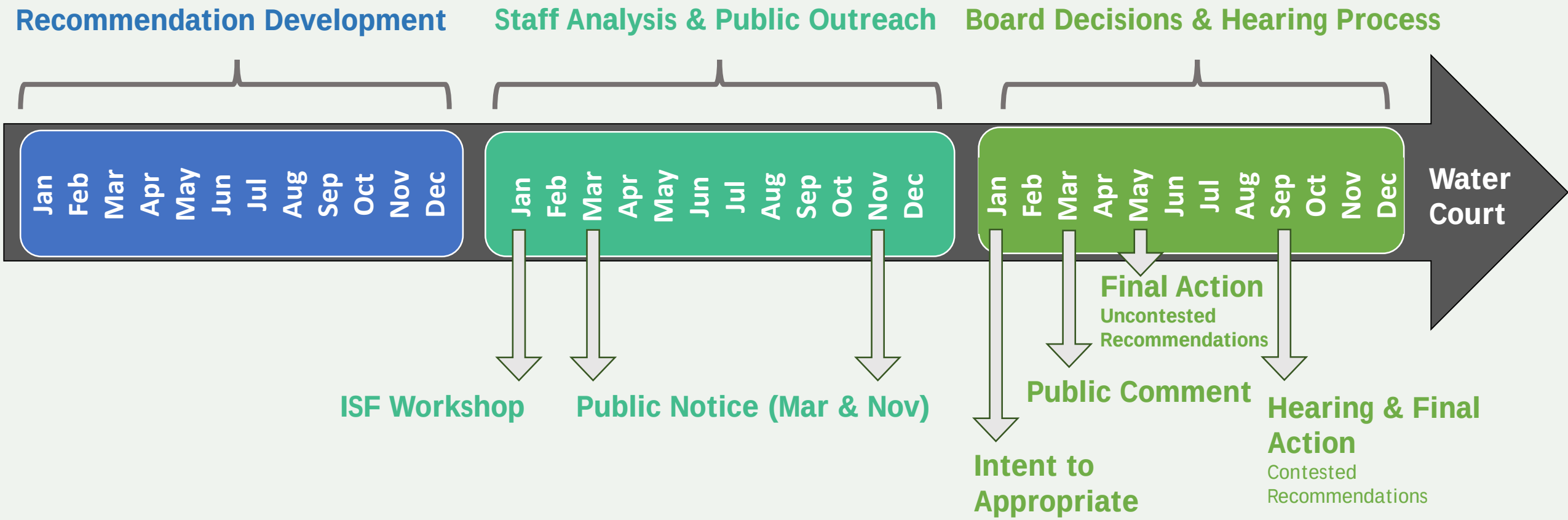
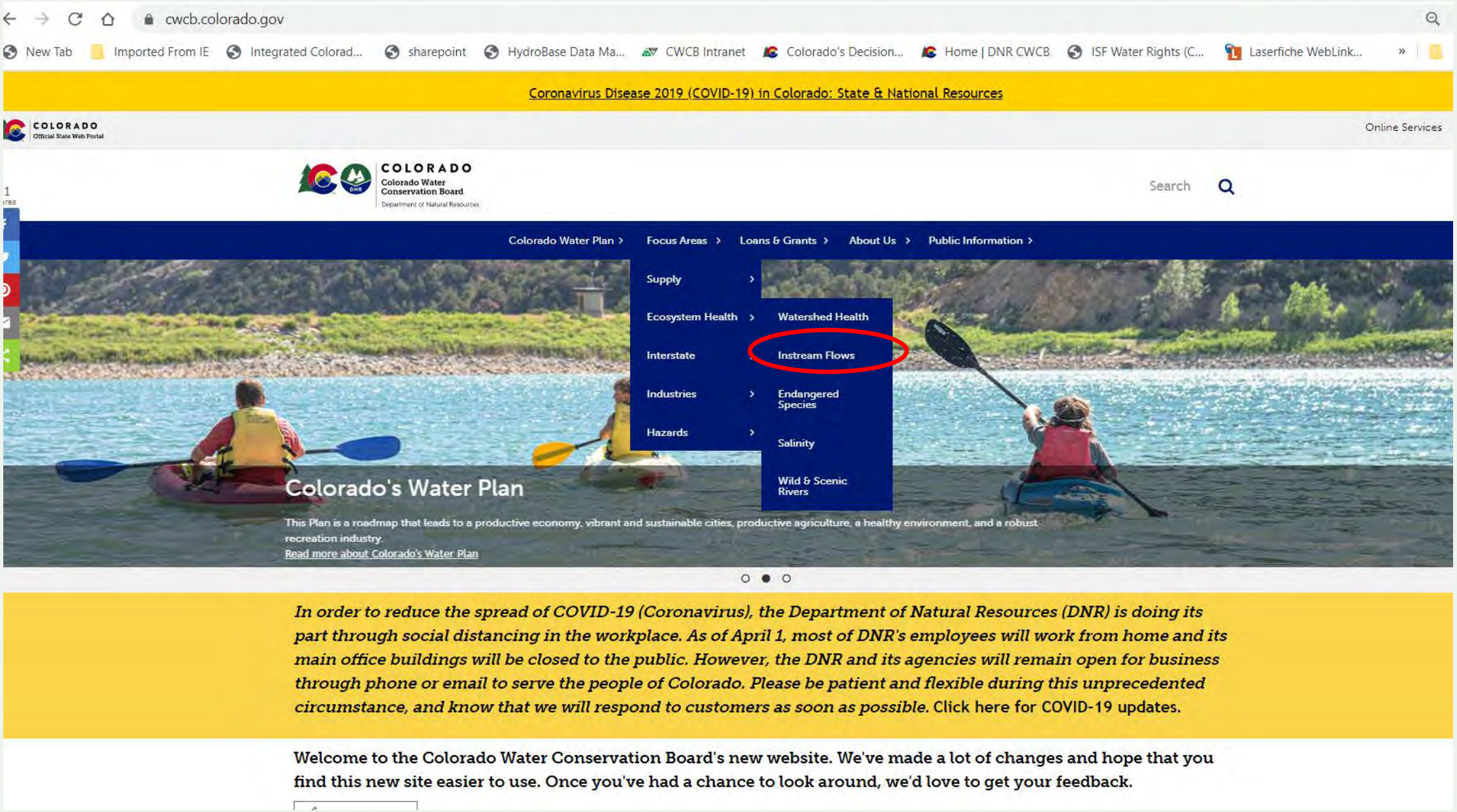


ISF TIMELINE



Timeline shows typical recommendation process, but the exact dates can vary. Please see ISF Rules and CWCB website for more detailed information and important dates.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Colorado's Water Plan
This Plan is a roadmap that leads to a productive economy, vibrant and sustainable cities, productive agriculture, a healthy environment, and a robust recreation industry.
Read more about Colorado's Water Plan
In order to reduce the spread of COVID-19 (Coronavirus), the Department of Natural Resources (DNR) is doing its part through social distancing in the workplace. As of April 1, most of DNR's employees will work from home and its main office buildings will be closed to the public. However, the DNR and its agencies will remain open for business through phone or email to serve the people of Colorado. Please be patient and flexible during this unprecedented circumstance, and know that we will respond to customers as soon as possible. Click here for COVID-19 updates.
Welcome to the Colorado Water Conservation Board's new website. We've made a lot of changes and hope that you find this new site easier to use. Once you've had a chance to look around, we'd love to get your feedback.

Instream Flow Program

In 1973, the General Assembly authorized the Colorado Water Conservation Board (CWCB) to appropriate water rights for instream flows and natural lake levels to preserve the natural environment to a reasonable degree. Since 1973, CWCB has appropriated instream flow water rights on nearly 1,700 stream segments covering more than 9,700 miles of stream, and natural lake level water rights on 480 natural lakes. The CWCB has also completed more than 35 voluntary water acquisition transactions.

Program Areas

Instream Flow and Natural Lake Level Appropriations

Water Acquisitions

Monitoring and Enforcement

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Learn More...

Statutes

Rules

ISF Law - Stories about the Origin and Evolution of Colorado's Instream Flow Law in this Prior Appropriation State

Instream Flow Water Rights Database

Mapviewer

data.colorado.gov/Water/CWCB-Instream-Flow-and-Natural-Lake-Level-Data/kzsx-aqy6/data

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CWCB Instream Flow and Natural Lake Level Data

Instream Flow and Natural Lake Level water rights of the Colorado Water Conservation

Find in this Dataset

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Case ...	Divisi..	Wate..	Wate..	Wa	Appr...	Appr...	Prior ..	WDID	Uppe..	UT U...	UT U...	Lowe..	LT UT..	LT UT..
83CW0231	4	59	Eyre Creek	Stream	New Appr...	06/03/1982		5901410	headwate...	348500.90	4315548.92	confl Tayl...	349650.62	4317129.9
84CW0404	4	40	Grouse S...	Stream	New Appr...	05/04/1984		4002351	headwate...	306424.31	4306916.11	confl Sno...	302311.39	4310081.(
17CW3065	2	18	Apishapa ...	Stream	New Appr...	01/24/2017		1803001	headwate...	498440.80	4134067.69	confl Herl...	504368.80	4131036.7
86CW0209	5	36	Tenmile C...	Stream	New Appr...	03/14/1986		3602032	confl Wes...	401735.97	4373933.18	confl Dillo...	406236.52	4381677.7
87CW0283	1	5	South Sai...	Stream	New Appr...	12/11/1987		0502129	hdgt Lon...	476447.87	4451550.85	confl Nor...	477314.62	4452284.(
89CW0205	1	4	Big Thom...	Stream	New Appr...	11/14/1989		0402111	confl NF ...	471268.16	4475807.58	hdgt Idyl...	473517.21	4475409.7
94CW0042	3	35	Big Sprin...	Stream	New Appr...	11/03/1994		3500717	1.4 mi d/s...	443498.56	4178702.28	hdgt Los ...	441107.00	4176650.9
84CW0394	4	62	West Fork...	Stream	New Appr...	05/04/1984		6201366	headwate...	277173.64	4218270.63	confl Silv...	277269.72	4233137.(
89CW0200	1	4	Big Thom...	Stream	New Appr...	11/14/1989		0402110	confl Dry ...	458779.69	4469657.18	confl NF ...	471268.16	4475807.5

< Previous Next >

Showing Water Rights 1 to 100

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Rules Concerning Colorado's Instream Flow and Natural Lake Level Program (House Bill 20-1157)

View Details

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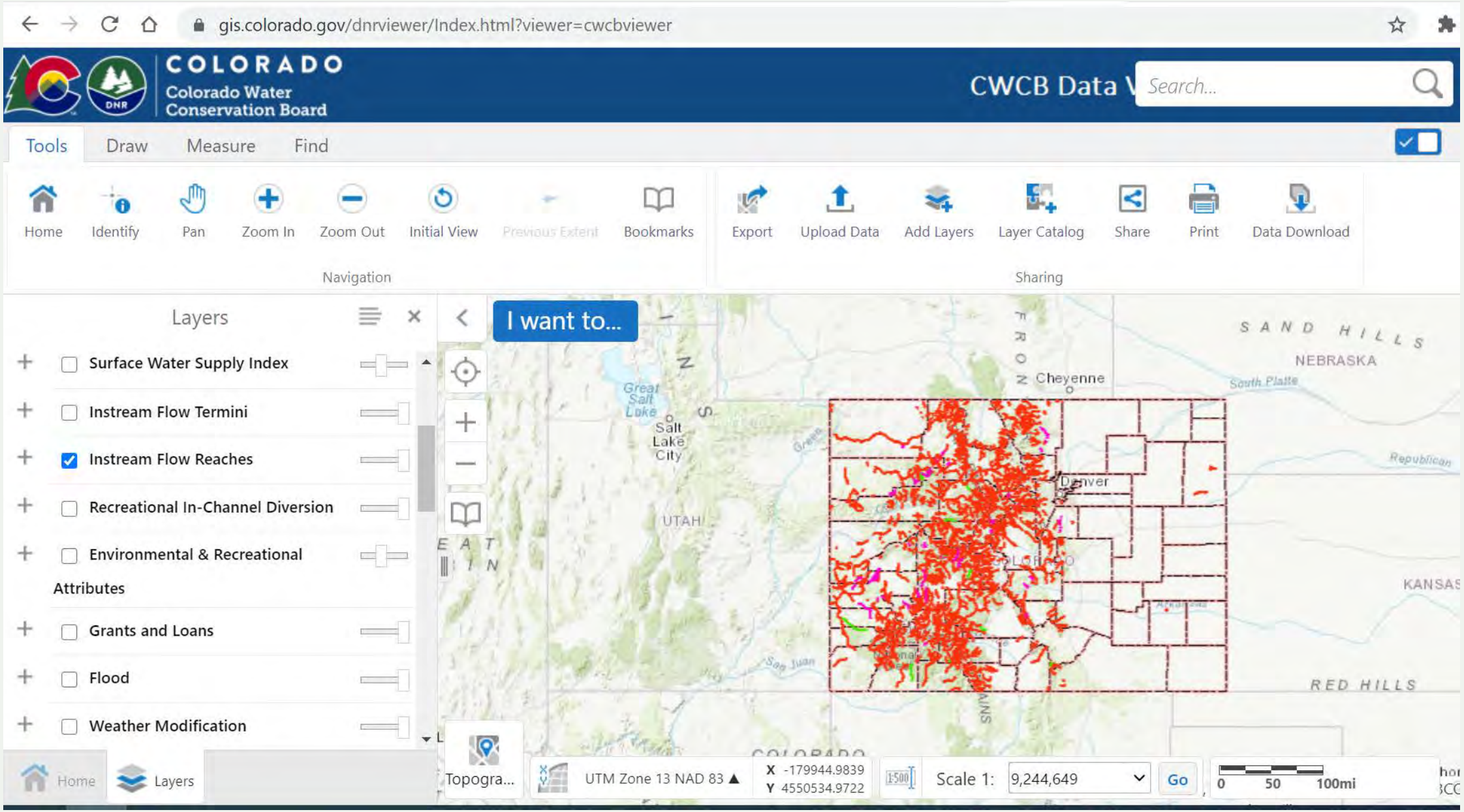
ISF Structures on CDSS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Initial View
Previous Extent
Bookmarks
Navigation
Export
Upload Data
Add Layers
Layer Catalog
Share
Print
Data Download
Sharing
Layers
I want to...
Surface Water Supply Index
Instream Flow Termini
Instream Flow Reaches
Recreational In-Channel Diversion
Environmental & Recreational
Attributes
Grants and Loans
Flood
Weather Modification
Home
Layers
Topogra...
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X -179944.9839
Y 4550534.9722
Scale 1: 9,244,649
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0 50 100mi
Cheyenne
Denver
Salt Lake City
Great Salt Lake
UTAH
COLORADO
NEBRASKA
KANSAS
SAND HILLS
RED HILLS
South Platte
Republican
San Juan

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Instream Flow and Natural Lake Level Appropriations

The CWCB appropriates water rights to preserve the natural environment of streams and lakes in the state. After receiving detailed recommendations for instream flow (ISF) water rights from state and federal agencies, conservation groups and members of the public, the CWCB reviews and processes the recommendations in accordance with the Board's ISF Rules. The CWCB performs detailed hydrological analyses to ensure that all recommendations meet the statutory requirements for an ISF appropriation. The CWCB notifies and involves the public throughout the ISF appropriation process.

Recommendation Process

Each January, the CWCB holds a workshop to request recommendations for streams and lakes to be protected. The workshop is open to the public and notice is provided through this Website and the ISF Subscription Mailing List. Any person or entity may submit recommendations. All recommendations are processed in accordance with the ISF Rules and statutes.

Recommended Instream Flow Appropriations

2021 ISF Recommendations
2020 ISF Recommendations
2020 Contested ISF Appropriations
2019 Contested ISF Appropriations

Proposed and Contested Appropriations

Instream Flow Recommendation Process

2021 ISF Recommendations

Pursuant to ISF Rule 5, the Colorado Water Conservation Board is providing notice that the following streams are being considered for appropriation. The earliest these streams could be recommended to the CWCB Board is at the January 2021 meeting. Staff is evaluating these recommendations for completeness and accuracy and performing an independent review of water availability. Staff requests public comment on these recommendations and urges any interested parties to provide comments to Rob Viehl. Detailed information regarding these proposed instream flow appropriations can be obtained by clicking on the stakeholder recommendation in the table below. Staff will provide regular updates to this table as information is received and developed.

Appropriation Notices

Presentations at the 2020 ISF Workshop

- CWCB Staff
- American Rivers 2021 Instream Flow Recommendation
- BLM 2021 Instream Flow Recommendations
- CPW 2021 Instream Flow Recommendations
- High Country Conservation Advocates 2021 Instream Flow Recommendations
- Request for Water Acquisitions Process

Mapping Data

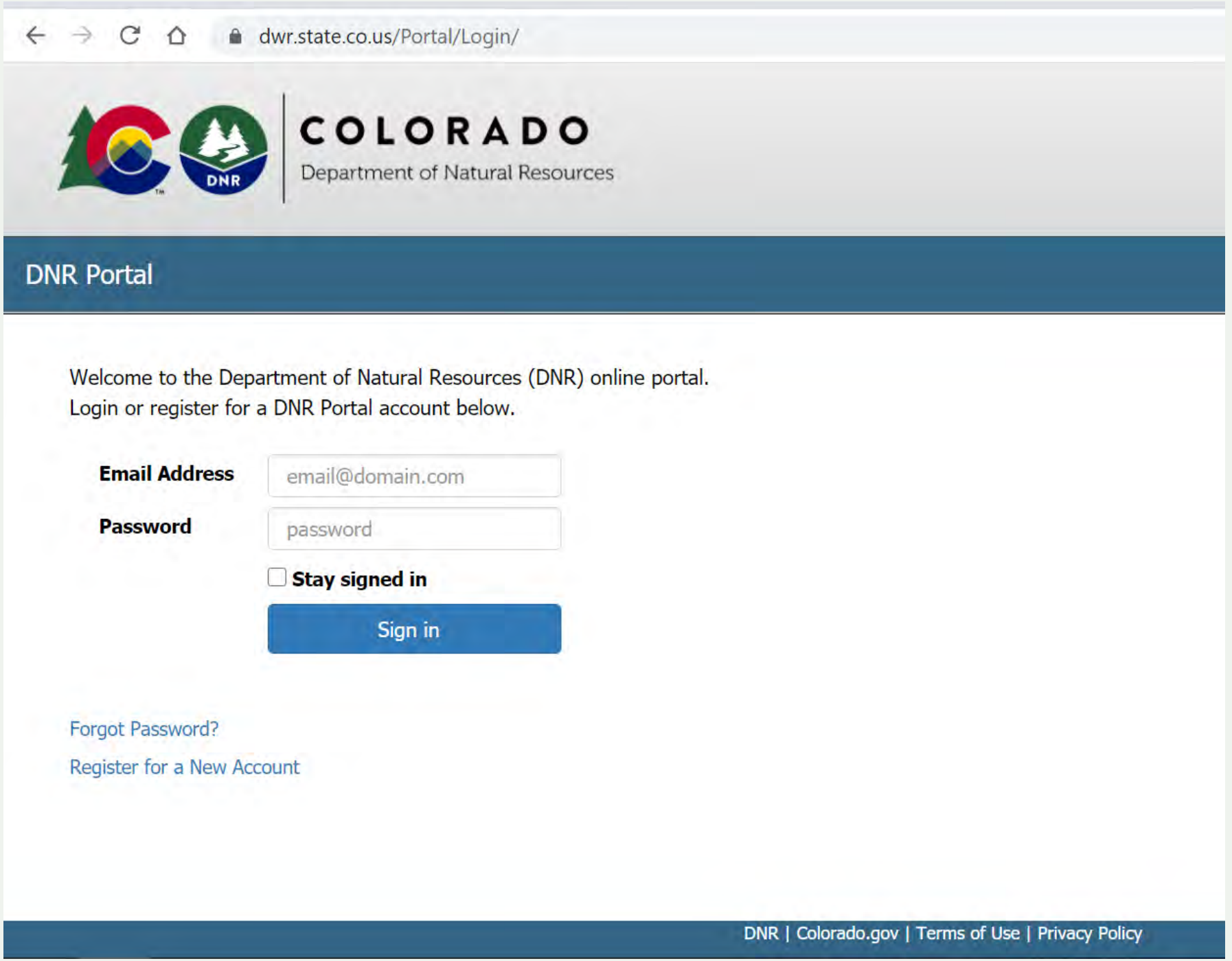
View the 2021 Recommendations in Google Earth Mapviewer

Additional Information

- Instream Flow Program
- Instream Flow and Natural Lake Level Appropriations
- Rules

Last Updated: [1/15/21]
Instream Flow Appropriations

Water Division	Stream Name	Supporting Documentation	Stakeholder	County	Status
1	Dry Gulch *(Headwaters to confl. Clear Creek)*	CWCB Executive Summary Recommendation	CPW	Clear Creek	Active
1	Garber Creek *(Conflu. North & South Garber Creeks to conflu. West Plum Creek)*		CPW	Douglas	Postponed until 2022
1	Herman Gulch (Increase) *(Headwaters to conflu. Clear Creek)*		CPW	Clear Creek	Postponed until 2022
1	North Fork Little Thompson River *(Confl. Hell Canyon Creek to confl. Little Thompson River)*	CWCB Executive Summary Recommendation	CPW and Larimer County Dept. of Natural Resources	Larimer	Active
1	Platte Gulch *(Headwaters to confl.*		CPW and Park County	Park	Postponed until 2022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